

Claims

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1. A patient support comprising
a frame,
a mattress supported by the frame, and
a siderail supported by the frame, the siderail includes a rail member and a linkage assembly configured to permit movement of the rail member between a raised position blocking egress of a patient positioned on the mattress and a lowered position, the linkage assembly including a first stationary cam member, a first rotary cam member positioned to contact the first stationary cam member to move the rail member along a longitudinal axis in a first direction when the rail member is moved to the lowered position, a second stationary cam member, and a second rotary cam member positioned to contact the second stationary cam member to move the rail member along the longitudinal axis in a second direction opposite the first direction when the rail member is moved to the raised position.
 2. A patient support comprising
a frame,
a mattress supported by the frame, and
a siderail supported by the frame, the siderail includes a rail member and a coupler configured to couple the rail member to the frame and permit movement of the rail member between a raised position blocking egress of a patient positioned on the mattress and a lowered position, the coupler including a cam assembly configured to move the rail member in a first direction during movement of the rail member.
 3. The patient support of claim 2, wherein the cam assembly includes a first cam set having first and second cam members configured to contact one another to move the rail member in the first direction.
 4. The patient support of claim 3, wherein the first cam member is configured to rotate about an axis of rotation relative to the second cam member.
 5. The patient support of claim 4, wherein the axis of rotation is parallel to a longitudinal axis of the rail member.
 6. The patient support of claim 4, wherein each of the first and second cam members have a cam surface and at least one of the cam surfaces cooperates with the axis of rotation to define an angle of forty-five degrees.

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7. The patient support of claim 4, wherein at least one of the first and second cam members is configured to slide along the axis of rotation during rotation of the first cam member.

5 8. The patient support of claim 3, wherein the coupler further includes a link coupled to the rail member and the first cam member.

9. The patient support of claim 7, wherein the link is pivotably coupled to the rail member.

10 10. The patient support of claim 7, wherein the first cam member is configured to rotate about an axis of rotation relative to the second cam member.

11. The patient support of claim 10, wherein the first cam member is configured to move along the axis of rotation during rotation of the first cam member relative to the second cam member.

12. The patient support of claim 3, wherein the cam assembly further includes another cam set having third and fourth cam members configured to contact one another to move the rail member.

13. The patient support of claim 12, wherein the coupler further includes a first link coupled to the first cam member and the rail member and a second link coupled to the third cam member and the second link.

14. The patient support of claim 12, wherein the first and second links are pivotably coupled to the rail member.

15 15. The patient support of claim 3, wherein the first and second cam members have complementary angled cam surfaces.

16. The patient support of claim 3, wherein the first and second cam member have congruently angled cam surfaces.

25 17. The patient support of claim 3, wherein one of the cam member is configured to rotate about an axis of rotation relative to the other cam member.

18. The patient support of claim 3, wherein the first cam member is configured to slide relative to the second cam member.

30 19. The patient support of claim 3, wherein the first cam set further includes a third cam member configured to contact the first cam member to move the rail member in a second direction opposite the first direction.

20. The patient support of claim 2, wherein the rail member has a longitudinal axis and the cam assembly is configured to move the rail member in a first longitudinal direction.

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21. The patient support of claim 20, wherein the cam assembly is configured to move the rail member in the first direction during lowering of the rail member.

5 22. The patient support of claim 21, wherein the cam assembly is configured to move the rail member in a second direction opposite the first direction during raising of the rail member.

23. The patient support of claim 20, wherein the cam assembly is configured to move the rail member in the first direction during raising of the rail member.

24. A patient support comprising
a frame,

10 a mattress positioned over the frame, and

a siderail including a rail member having a longitudinal axis and a linkage assembly configured to permit movement of the rail member between a raised position blocking egress of a patient positioned on the mattress and a lowered position permitting egress, the linkage assembly having a longitudinal axis deviating from being perpendicular to and deviating from being parallel with the longitudinal axis of the rail member at all times during movement of the rail member from the raised position to the lowered position.

15 25. The patient support of claim 24, wherein a longitudinal axis of the linkage assembly when the rail member is in the raised position is collinear with the longitudinal axis of the linkage assembly when the rail member is in the lowered position.

20 26. The patient support of claim 24, wherein the linkage assembly rotates about an axis of rotation that deviates from being perpendicular to and deviates from being parallel with the longitudinal axis of the rail member at all times during movement of the rail member from the raised position to the lowered position.

25 27. The patient support of claim 24, wherein the linkage assembly rotates about an axis of rotation that deviates from being horizontal when the mattress is in a flat bed position.

28. The patient support of claim 27, wherein the axis of rotation has a component that is vertical and a component that is horizontal when the mattress is in a flat bed position.

30 29. The patient support of claim 24, wherein the linkage assembly is configured to move the rail member in a first longitudinal direction during all downward movement of the rail member from the raised to lowered position.

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5 30. The patient support of claim 29, wherein the linkage assembly is configured to move the rail member in a second longitudinal direction during all upward movement of the rail member from the lowered position to the raised position, the second longitudinal direction is opposite the first longitudinal direction.

10 31. A patient support comprising
 a frame,
 a mattress supported by the frame, and
 a siderail including a rail member and a coupler configured to couple the rail member to the frame, the rail member having a longitudinal axis, the coupler being
 configured to rotate the rail member about an axis of rotation from a raised position to a lowered position, the axis of rotation deviating from being perpendicular and deviates from being parallel with the longitudinal axis of the rail member at all times during rotation of the rail member from the raised position to the lowered position.

15 32. The patient support of claim 31, wherein the coupler includes a linkage assembly having a longitudinal axis, the longitudinal axis of the linkage assembly when the rail member is in the raised position is collinear with the longitudinal axis of the linkage assembly when the rail member is in the lowered position.

20 33. The patient support of claim 31, wherein the axis of rotation of the rail member deviates from being horizontal when the mattress is in a flat bed position.

25 34. The patient support of claim 31, wherein the axis of rotation of the rail member includes a horizontal component and a vertical component.

30 35. The patient support of claim 31, wherein the coupler is configured to move the rail member in a first longitudinal direction during all downward movement of the rail member from the raised position to the lowered position.

25 36. The patient support of claim 34, wherein the coupler is configured to move the rail member in a second longitudinal direction during all upward movement of the rail member from the lowered position to the raised position, the second longitudinal direction being opposite the second longitudinal direction.

30 37. The patient support of claim 31, wherein the coupler is configured to move the rail member sideways away from the mattress and longitudinally during movement of the rail member to the lowered position.

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38. A patient support comprising
a frame,

a mattress supported by the frame, and

10 a siderail including a rail member having a longitudinal axis and a coupler
configured to couple the rail member to the frame and permit movement of the rail member
between a raised position blocking egress of a patient positioned on the mattress and a
lowered position permitting egress, the coupler being configured to move the rail member in
a first longitudinal direction during all downward movement of the rail member from the
raised position to the lowered position.

15 10 39. The patient support of claim 38, wherein the coupler is configured to
move the rail member in a second longitudinal direction during all upward movement of the
rail member from the lowered position to the raised position, the second longitudinal
direction is opposite the first longitudinal direction.

15 40. The patient support of claim 38, wherein the coupler is configured to
move the rail member sideways away from the mattress and longitudinally during movement
of the rail member to the lowered position.

20 41. The patient support of claim 38, wherein the coupler includes a linkage
assembly including a longitudinal axis, the longitudinal axis of the linkage assembly when
the rail member is in the raised position is collinear with the longitudinal axis of the linkage
assembly when the rail member is in the lowered position.

42. The patient support of claim 38, wherein the coupler rotates the rail
member about an axis of rotation that deviates from being perpendicular and deviates from
being parallel with the longitudinal axis of the rail member at all times during movement of
the rail member from the raised position to the lowered position.

25 43. The patient support of claim 38, wherein the coupler rotates the rail
member about an axis of rotation that deviates from being horizontal.

44. The patient support of claim 38, wherein the rail member rotates about
an axis of rotation that has a horizontal component and vertical component when the mattress
in a flat bed position.

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45. A patient support comprising a frame, a mattress positioned over the frame, and a siderail including a rail member having a longitudinal axis and a coupler configured to permit movement of the rail member between a raised position blocking egress of a patient positioned on the mattress and a lowered position permitting egress, the coupler being configured to move the rail member in a first longitudinal direction during lowering of the rail member to the lowered position without moving in a second longitudinal direction opposite the first longitudinal direction.

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46. The patient support of claim 45, wherein the coupler is configured to move the rail member sideways away from the rail member during lowering of the rail member.

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47. The patient support of claim 45, wherein the rail member rotates about an axis of rotation that deviates from being perpendicular and deviates from being parallel with the longitudinal axis of the rail member at all times during movement of the rail member from the raised position to the lowered position.

48. The patient support of claim 45, wherein the rail member rotates about an axis of rotation that deviates from being horizontal when the mattress is in a flat bed position.

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49. The patient support of claim 45, wherein the coupler is configured to move the rail member in the second longitudinal direction during raising of the rail member to the raised position without moving in the first longitudinal direction.

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50. A patient support comprising a frame; a mattress positioned over the frame, and a siderail including a rail member having a longitudinal axis and a coupler configured to couple the rail member to the frame and to permit movement of the rail member between a raised position blocking egress of a patient positioned on the mattress and a lowered position, the coupler being configured to move the rail member in a longitudinal direction and a sideways direction away from the mattress during movement of the rail member between the raised and lowered positions.

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51. The patient support of claim 50, wherein the rail member rotates about an axis of rotation during movement between the raised and lowered position and the axis of rotation has a longitudinal component.

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52. The patient support of claim 51, wherein the axis of rotation has a horizontal component.

53. The patient support of claim 50, wherein the coupler includes a set of cam members that interact during movement of the rail member between the raised and lowered positions to move the rail member in the longitudinal direction.

54. The patient support of claim 50, wherein the coupler is configured to move the rail member in a first longitudinal direction during all downward movement of the rail member from the raised to lowered position.

10 55. The patient support of claim 50, wherein the coupler includes a 4-bar linkage assembly.

56. The patient support of claim 50, wherein a longitudinal axis of the linkage assembly when the rail member is in the raised position is collinear with the longitudinal axis of the linkage assembly when the rail member is in the lowered position.

15 57. The patient support of claim 50, wherein the linkage assembly rotates about an axis of rotation that deviates from being perpendicular to and deviates from being parallel with the longitudinal axis of the rail member at all times during movement of the rail member from the raised position to the lowered position.

20 58. The patient support of claim 50, wherein the linkage assembly rotates about an axis of rotation that deviates from being horizontal when the mattress is in a flat bed position.

59. The patient support of claim 58, wherein the axis of rotation has a component that is vertical and a component that is horizontal when the mattress is in a flat bed position.

25 60. A patient support comprising
a frame,
a mattress supported by the frame, and
a siderail including a rail member and a coupler configured to permit rotation of the rail member about an axis of rotation between a raised position and a lowered position, the axis of rotation deviating from being horizontal when the mattress is in a flat bed position.

30 61. The patient support of claim 60, wherein the rail member includes a longitudinal axis and the rail member moves in a longitudinal direction when moved between the raised and lowered positions.

62. The patient support of claim 61, wherein rail member moves sideways away from the mattress when moved between the raised and lowered positions.

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63. The patient support of claim 60, wherein the rail member includes a longitudinal axis that deviates from being parallel with the axis of rotation.

64. The patient support of claim 63, wherein the coupler includes a 4-bar linkage assembly.

65. A patient support comprising
a frame,
a mattress supported by the frame,
a siderail comprising a rail member having a first longitudinal axis and a linkage assembly configured to support the rail member on the frame, the linkage assembly having a second longitudinal axis and being configured to permit rotation of the rail member about an axis of rotation, the axis of rotation and the second longitudinal axis of the link assembly having a longitudinal component relative to the first longitudinal axis.

10 66. The patient support of claim 65, wherein the axis of rotation has a vertical and horizontal component when the mattress is in a flat bed position.

15 67. The patient support of claim 65, wherein the axis of rotation deviates from being horizontal when the mattress is in a flat bed position.

68. The patient support of claim 65, wherein the second longitudinal axis of the linkage assembly includes vertical and horizontal components when the mattress is in a flat bed position.

20 69. The patient support of claim 68, wherein the rail member moves sideways away from the mattress and longitudinally when moved to the lowered position.

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